

REMARKS

At the time of the Office Action dated November 16, 2004, claims 2-6 and 16-19 were pending in this application. Of those claims, claims 2, 4, 16-17 and 19 have been rejected. Applicants acknowledge, with appreciation, the Examiner's allowance of claims 3, 5-6, and 18. Claim 19 has been added to clarify the limitations recited therein. Applicants submit that the present Amendment does not generate any new matter issue.

CLAIM 19 IS REJECTED UNDER THE SECOND PARAGRAPH OF 35 U.S.C. § 112

In the statement of the rejection, the Examiner asserted that the limitation "wherein said semiconductor film is formed in a region where any opaque film is not formed" is not supported by the drawings. The Examiner also asserted that claim 19 recites three substrates yet only two substrates are described in the specification.

In response, Applicants note that claim 19 has been amended to delete the expression "a region where any opaque film is not formed." Applicants also note that claim 19 has been amended to recite two substrates, a first substrate and a second substrate. Applicants, therefore, respectfully submit that the Examiner's rejection of claim 19 under the second paragraph of 35 U.S.C. § 112 has been traversed.

CLAIM 16 IS REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON

SAWAYAMA ET AL., U.S. PATENT NO. 6,184,960 (HEREINAFTER SAWAYAMA) IN VIEW OF
SHIMADA ET AL., U.S. PATENT NO. 6,052,162 (HEREINAFTER SHIMADA), AND KIRYU ET AL.,
U.S. PATENT NO. 5,368,962 (HEREINAFTER KIRYU)

On pages three through five of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the combination of Sawayama, Shimada and Kiryu to arrive at the claimed invention. This rejection is respectfully traversed.

Specifically, in the statement of the rejection, the Examiner asserted that Sawayama discloses all of the claimed limitations with the exception of the claimed type of photosensitive positive-type acrylic resin and the claimed limitations regarding the ultraviolet-cut film. The Examiner relied upon Shimada to teach the particular photosensitive positive-type acrylic resin being claimed and Kiryu to teach the limitations regarding the ultraviolet-cut film.

Applicants submit that one skilled in the art would not have been motivated to modify Sawayama in view of Kiryu to arrive at the claimed invention. For a reference to be applied against a particular invention, the reference must be considered analogous prior art, which involves (a) determining whether the reference is within the same field of endeavor and (b) determining whether the reference reasonably pertinent to the particular problem with which the invention is involved.¹ If the prior art is outside the inventor's field of endeavor, the inventor

¹ In re Clay, 23 USPQ2d 1058 (Fed Cir. 1992).

will only be presumed to have knowledge of prior art that is reasonably pertinent to the problem being addressed.²

Kiryu is not directed to semiconductor manufacturing, but instead, generally to a "lightsafe masking film" that has no apparent relationship with semiconductor manufacturing. Therefore, Kiryu cannot be considered to be within the same field of endeavor as the claimed invention. The claimed invention is directed to improving the quality and manufacturing of a reflection type liquid crystal display. The Examiner, however, has failed to establish that Kiryu is reasonably pertinent in achieving these objectives. Thus, Applicants submit that Kiryu is non-analogous prior art that cannot be applied against the claimed invention.

Applicants also submit that one having ordinary skill in the art would not have been motivated to modify Sawayama in view of Kiryu based upon the Examiner's asserted motivation to combine. In the statement of the rejection, the Examiner asserted that:

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Sawayama et al. with the teaching of Kiryu by sticking an ultraviolet-cut film on a face of the transparent insulating substrate opposite to the face where said photosensitive positive-type resin is applied for cutting ultraviolet rays having a wavelength of 450 nm or less to improve the display workability during exposure to actinic light in the photomechanical reproduction process. (col. 1, lines 10-16 and 38-41).

The Examiner, however, has failed to explain why one skilled in the art of semiconductor manufacturing would consider, as being desirable, "[improving] the display workability during exposure to actinic light in the photomechanical reproduction process," which is the Examiner's asserted benefit that would motivate one skilled in the art to modify Sawayama in view of Kiryu. As noted above, Kiryu fails to state that these teachings are applicable to semiconductor

² In re Wood, 202 USPQ 171 (C.C.P.A. 1979).

manufacturing. As such, there is no factual evidence that would support a finding that one skilled in the art would be motivated to modify the semiconductor manufacturing process of Sawayama in view of Kiryu.

Furthermore, even if one skilled in the art were motivated to modify Sawayama in view of Kiryu, the claimed invention would not result. Kiryu is silent as to the specific limitations regarding the placement of the ultraviolet-cut film (i.e., "on a face of the transparent insulating substrate opposite to the face where said photosensitive resin is applied") and when the development is applied (i.e., "after exfoliating said ultraviolet-cut film"). It is not enough for Kiryu to disclose only the existence of the ultraviolet-cut film. Instead, Kiryu must also disclose where the film is placed and when the development occurs. These limitations, however, are neither taught nor suggested by Kiryu. Therefore, one having ordinary skill in the art would not have arrived at the claimed invention based upon the combination of Sawayama, Shimada, and Kiryu. For the reasons stated above, Applicants respectfully solicit withdrawal of the imposed rejection of claim 16 under 35 U.S.C. § 103 for obviousness based upon Sawayama in view of Shimada and Kiryu.

**CLAIM 17 IS REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON
SAWAYAMA IN VIEW OF SHIMADA**

On pages six through eight of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify Sawayama in view of Shimada to arrive at the claimed invention. This rejection is respectfully traversed.

Applicants note that in the statement of the rejection, the Examiner referred specifically to Figs. 7C-7D and 7F-7G of Sawayama to respectively disclose the claimed steps of forming an interlayer insulating film and another interlayer insulating film. Claim 17 recites that "another interlayer insulating film" is formed on "another predetermined position "by conducting exposure at a different exposure amount." This feature, however, is not taught by Sawayama.

Furthermore, claim 17 also recites that the "another interlayer insulating film" is formed at "another predetermined position" (i.e., a different position than where the initial interlayer insulating film). In contrast, Sawayama discloses that both asserted interlayer insulating films are formed in the same location. Therefore, Sawayama also fails to disclose this particular limitation. Since Sawayama fails to disclose the limitations for which Sawayama is being relied upon in the rejection, Applicants submit that one skilled in the art would not have arrived at the claimed invention recited in claim 17 based upon the combination of Sawayama in view of Shimada. Applicants, therefore, respectfully solicit withdrawal of the imposed rejection of claim 17 under 35 U.S.C. § 103 for obviousness based upon Sawayama in view of Shimada.

**CLAIMS 2 AND 4 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON
SAWAYAMA IN VIEW OF SHIMADA AND FURTHER IN VIEW OF TAKATSU ET AL., U.S. PATENT
No. 5,434,026 (HEREINAFTER TAKATSU)**

On pages eight through ten of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the methodology of Sawayama in view of Shimada and Takatsu to arrive at the claimed invention. This rejection is respectfully traversed.

Claim 2 recites, in part, that:

the positive type acrylic resin is exposed by divisional (split) exposure in which the inseparable pattern and the separable pattern are exposed by different masks,

an exposure amount for said inseparable pattern is exposed by a predetermined exposure amount of 20 to 80 % of the exposure amount for said separable pattern.

In the Amendment filed August 20, 2004, Applicants previously argued that Takatsu fails to teach the limitations for which Takatsu is being relied upon by the Examiner. In particular, the Examiner referred to Fig. 1c of Takatsu to teach exposure of a mask at different exposure intensities. However, Fig. 1c of Takatsu refers only to different positions of a single mask during a single exposure. In contrast, the claimed invention is directed to two masks and two different exposures. Thus, Applicants argued that Takatsu fails to teach the limitations for which Takatsu is being relied upon by the Examiner.

The Examiner's response to this argument is found on page fourteen of the Office Action in which the Examiner asserted "the reference of Takatsu is employed for teaching determining proper amount of exposure to light intensity to obtain desired patterns." Notwithstanding that the Examiner has established that Takatsu teaches determining a proper amount of exposure to obtain desired patterns, the desired patterns described by Takatsu refer only to different positions of a single mask. The Examiner has failed to establish a motivation that would lead one skilled in the art to use methodology of Takatsu and apply these teachings to different masks for use with different patterns. There is no teachings in the citations referred to by the Examiner for

support (i.e., column 3, lines 24-27 and column 4, lines 27-31) that would lead one skilled in the art to believe that the teachings of Takatsu are applicable to different masks used for different patterns. Given the lack of factual support in the applied references for the Examiner's motivation to combine, Applicants can only surmise that the Examiner has engaged in impermissible hindsight reconstruction of the claimed invention.

The above argument presumes that the Examiner's assertion in the second paragraph on page 9 of the Office Action is factually correct (i.e., Sawayama discloses divisional exposure in which the inseparable pattern and the separable pattern are exposed by different masks). This presumption, however, is only made for sake of argument since Sawayama fails to teach this particular limitation. Instead, as illustrated in Figs. 7C and 7G, Sawayama shows a separate exposure with the use of masks of different uneven patterns. The uneven patterns shown in the figures of Sawayama are not inseparable patterns. Thus, Sawayama fails to teach these limitations for which Sawayama is being relied upon by the Examiner to teach.

For the reasons stated above, Applicants respectfully solicit withdrawal of the imposed rejection of claims 2 and 4 under 35 U.S.C. § 103 for obviousness based upon Sawayama in view of Shimada and Takatsu.

CLAIM 19 IS REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON TSUDA ET AL., U.S. PATENT NO. 6,262,783 (HEREINAFTER TSUDA) IN VIEW OF SHIMADA AND FURTHER IN VIEW OF MEI ET AL., U.S. PATENT NO. 6,140,668 (HEREINAFTER MEI)

On pages eleven through thirteen of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the methodology of Tsuda in view of and Shimada and Mei to arrive at the claimed invention. This rejection is respectfully traversed.

Initially, Applicants note that claim 19 has been amended to recite that a transparent insulating plate is processed so that the entire surface does not permit ultraviolet light to transmit therethrough. Thus, exposure from a front side is permitted and exposure from a back side cannot be performed. Furthermore, at the time of exposure from the front side, reflected light is restricted from the substrate holder, which is located on the back side of the transparent insulating film and supports the transparent insulating plate. Thus, occurrences of the photosensitive resin being exposed or photosensitized due to unwanted light (i.e., reflected light) can be prevented.

In contrast, Tsuda discloses a LCD with back side exposure. In this configuration, as shown in Fig. 4(a), it is essential to submit the resist 420 to full exposure by fully transmitting the exposure light from the back side to the front side of the resist 420 of the first layer considering the treatment with a developer in a subsequent development step. Accordingly, as shown in Fig. 4(c), a large difference exists in unevenness between the portion from which the resist 420 has been fully removed and the portion in which the resist 420 remains. To reduce this

difference in unevenness, as shown in Fig. 5, a resist 422 is applied onto the first resist, thereby achieving an interlayer insulating film under the picture element electrode having a desired unevenness. Thus, according to Tsuda, it is required to compose the interlayer insulating film with two layers of resists 420, 422. In contrast, when exposure is performed from the front side, as with the present invention recited in claim 19, the problems described above with regard to Tsuda do not exist and the interlayer insulating film can be composed of just one layer. Applicants, therefore, submit that one having ordinary skill in the art would not have arrived at the claimed invention based upon the combination of Tsuda, Shimada, and Mei. Thus, Applicants respectfully solicit withdrawal of the imposed rejection of claim 19 under 35 U.S.C. § 103 for obviousness based upon Tsuda in view of Shimada and Mei.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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